

A revision of the *Babingtonia virgata* (J.R.Forst. & G.Forst.) F.Muell. complex (Myrtaceae) in Australia

A.R. Bean

Summary

Bean, A.R. (1999). A revision of the *Babingtonia virgata* (J.R.Forst. & G.Forst.) F.Muell. complex (Myrtaceae) in Australia. *Austrobaileya* 5(2): 157–171. Seven Australian species related to *Babingtonia virgata* are described as new viz. *B. angusta*, *B. collina*, *B. crassa*, *B. brachypoda*, *B. bidwillii*, *B. papillosa* and *B. similis*, and one new combination is made, *B. pluriflora*. All species are described and illustrated and notes are provided on their distribution, habitat and conservation status. *Babingtonia virgata* is considered to be endemic to New Caledonia. A description of it is provided for comparative purposes, and its relationship to Australian taxa is discussed. A revised key is provided to all species of *Babingtonia* from eastern Australia, and for the Australian members of the *B. virgata* complex.

Keywords: Myrtaceae, *Baeckea*, *Babingtonia*, *Baeckea virgata*, *Babingtonia virgata*, *Babingtonia angusta*, *Babingtonia collina*, *Babingtonia crassa*, *Babingtonia brachypoda*, *Babingtonia bidwillii*, *Babingtonia papillosa*, *Babingtonia similis*, taxonomy, keys, Australia, New Caledonia

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Introduction

The shrub now known as *Babingtonia virgata* was first collected by the Forsters from the island of New Caledonia in 1774, and later named by them as *Leptospermum virgatum*. The species was transferred by the younger Linnaeus to the genus *Melaleuca* in 1781, and then to *Baeckea* by Andrews (1810). In his discussion, Andrews refers to the presence of *Baeckea* species in New Holland (soon after to become known as Australia), but did not suggest the presence of *B. virgata* there. However, specimen determinations at the Herbarium, Kew, from that era suggest that that was the popular opinion. Schauer (1843) erected a new genus, *Harmogia*, to accommodate *B. virgata* and several other species, but did not comment on the distribution of any of the species. Both Mueller (1864) and Bentham (1867) ascribed *B. virgata* to eastern Australia as well as to New Caledonia. Mueller (loc. cit.) reduced his own species *Camphoromyrtus pluriflora* F.Muell. to *Baeckea virgata*, then later in the same publication made the combination *Babingtonia virgata*, which is accepted here. Bentham (loc. cit.) established a broad generic and species concept, reducing *Harmogia* and *Babingtonia*

to sectional status under *Baeckea*, and included a wide range of Australian and New Caledonian forms under the name *Baeckea virgata*. Bailey (1900) described a new variety, *B. virgata* var. *parvula* (described here as *Babingtonia bidwillii*), but no other taxa in the group have since been described from Australia. Dawson (1992) revised the New Caledonian members of the *Baeckea virgata* group, and recognised 4 species in it. *Babingtonia* was reinstated by Bean (1997) and revised for eastern Australia and New Caledonia, with the exception of the *B. virgata* complex which is here treated.

B. virgata and its allies form a taxonomically very difficult group as the species involved are still apparently evolving, and there is continuing exchange of genetic material between populations/taxa in some areas. This results in the blurring of species boundaries, with some species pairs intergrading over a distance of 50–100 kilometres. As a result, it is sometimes very difficult to allocate some specimens to a particular taxon.

Taxonomic and ecological characteristics

Within the genus *Babingtonia*, the Australian members of the *B. virgata* group of species are distinguished by the following combination of

characters: trunk fluted on large specimens; leaves entire, thin-textured, with length more than 2.5 times the width; inflorescences usually 3 or 7 (occasionally 9-, rarely 1-) flowered; ovules more than 15 per loculus, radially arranged around the placenta.

Within the numbering scheme presented by Bean (1997), all of the Australian taxa presented in this paper can be placed between No. 5 (*B. virgata*) and No. 6 (*B. tozerensis*).

In Australia, species in the *B. virgata* group may occupy mesic habitats on creekbanks or as understorey in eucalypt forests, or paradoxically they may occupy xeric sites on rocky outcrops. In all cases the soils are sandy or skeletal and the available nutrients are comparatively low.

Methods

This study is based upon the examination of herbarium material from A, BM, BRI, G, GH, K, MEL, NE, NSW, HO, P, and WELTU. Stipe and peduncle lengths were measured on flowering material, as the peduncle (and possibly the stipe) elongate after anthesis, and measurements taken on fruiting material can be quite different.

Measurements of leaves and branchlets were taken from dried herbarium material; branchlet descriptions are based on young material (within 50 mm of shoot apices). Measurements of floral parts are based either on material preserved in spirit or material which has been reconstituted by boiling.

All species have been examined in the field.

Key to the *Babingtonia* species of eastern Australia

1. Leaf margins crenulate or conspicuously irregular 2
 Leaf margins entire or minutely denticulate 3
2. Leaves 4.2–6.1 mm long, crenulate. Mt Buffalo, Victoria **B. crenulata**
 Leaves 1.2–2.4 mm long, margins conspicuously irregular. Central–northern
 NSW **B. cunninghamii**
3. Leaves more than 1.5 mm wide 4
 Leaves less than 1.5 mm wide 12
4. Inflorescences 3- or 7–(9)-flowered 5
 Inflorescences 1-flowered 11
5. Leaf midrib impressed on upper surface; quadrangular branchlets with
 undulating surface and crenate margins **B. pluriflora**
 Leaf midrib not impressed on either surface; quadrangular branchlets smooth
 or papillose, with entire margins 6
6. Oil glands on branchlets raised, papillose 7
 Oil glands on branchlets not raised or impressed 8
7. Flower stipes 2–3.5 mm long; petals 2.5–3 mm across **B. papillosa**
 Flower stipes 3.5–5 mm long; petals 3–3.5 mm across **B. tozerensis**
8. Most inflorescences 3-flowered 9
 Most inflorescences 7-flowered 10
9. Leaves obovate; flower stipes 1.2–2.5 mm long **B. brachypoda**
 Leaves elliptical; flower stipes 2.5–4.5 mm long **B. bidwillii**
10. Leaves 1.7–2.5 mm wide; bracts up to 1.4 mm long **B. collina**
 Leaves 2.5–3.5 mm wide; bracts 1–2.5 mm long **B. crassa**

11. Petals 2.6–3.0 mm wide; hypanthium muricate; leaf length/breadth ratio
 1.7–2.2 **B. prominens**
 Petals 1.5–2.3 mm wide; hypanthium smooth; leaf length/breadth ratio
 1.2–1.7 **B. silvestris**
12. Leaf apex uncinata **B. behrii**
 Leaf apex acute or obtuse 13
13. Inflorescences (1-) 3–7-flowered 14
 Inflorescences consistently 1-flowered 15
14. Leaves plano-convex to concavo-convex, 5.5–10 × 0.5–1.0 mm **B. angusta**
 Leaves flat, 9–15 × 1.1–1.5 mm **B. similis**
15. Outer sepals acute or acuminate, 0.8–1.8 mm long 16
 Outer sepals obtuse, up to 0.3 mm long, or absent 18
16. Leaves broadly ovate, 0.9–1.5 mm long; hypanthium smooth **B. squarrulosa**
 Leaves linear to lanceolate, 2.5–6.5 mm long; hypanthium smooth or muricate 17
17. Stamens 5–9; ovules 8 or 9 per loculus; leaves 0.7–1.4 mm wide **B. granitica**
 Stamens 11–13; ovules 12–14 per loculus; leaves 0.5–0.8 mm wide **B. odontocalyx**
18. Leaves obovate; pedicels 2.0–4.2 mm long; outer sepals present;
 hypanthium 5-ribbed **B. jucunda**
 Leaves linear; pedicels 0.4–1.0 mm long; outer sepals absent; hypanthium
 smooth **B. densifolia**

Key to the Australian species allied to *Babingtonia virgata*

1. Leaf midrib impressed on upper surface; quadrangular branchlets with
 undulating surface and crenate margins **4. B. pluriflora**
 Leaf midrib not impressed on either surface; quadrangular branchlets
 smooth or papillose, with entire margins 2
2. Oil glands on branchlets raised, papillose **8. B. papillosa**
 Oil glands on branchlets not raised or impressed 3
3. Most inflorescences 3-flowered 4
 Most inflorescences 7-flowered 7
4. Leaves obovate; flower stipes 1.2–2.5 mm long **7. B. brachypoda**
 Leaves elliptical to linear; flower stipes 2.5–4.5 mm long 5
5. Leaves plano-convex to concavo-convex, 0.5–1.0 mm wide **3. B. angusta**
 Leaves flat, 1.1–2 mm wide 6
6. Leaves 9–17 mm long; bracts up to 1.3 mm long **2. B. similis**
 Leaves 4.5–6.5 mm long; bracts 1.2–2 mm long **1. B. bidwillii**
7. Leaves 1.7–2.5 mm wide; bracts up to 1.4 mm long **6. B. collina**
 Leaves 2.5–3.5 mm wide; bracts 1–2.5 mm long **5. B. crassa**

Babingtonia virgata (J.R.Forst. & G.Forst.) F.Muell., *Fragm.* 4: 74 (1864); *Leptospermum virgatum* J.R.Forst. & G.Forst., *Char. Gen. Pl.* 48 (1776); *Melaleuca virgata* (J.R.Forst. & G.Forst.) L.f., *Supp. Pl.* 343 (1781); *Baeckea virgata* (J.R.Forst. & G.Forst.) Andrews, *Bot. Repos.* 9: t. 598 (1810); *Harmogia virgata* (J.R.Forst. & G.Forst.) Schauer, *Linnaea* 17: 238 (1843). **Type:** New Caledonia, in 1774, *J.R. Forster & G. Forster* (holo: K).

Leptospermum parvulum Labill., *Sert. Austro-Caledon.* 62, t. 61 (1825); *Baeckea parvula* (Labill.) DC., *Prodr.* 3: 229 (1828). **Type:** New Caledonia, in 1793, *J.J. Labillardiere* (holo: FI).

Baeckea parvula var. *latifolia* Brongn. & Gris, *Bull. Soc. Bot. France* 11: 184 (1864). **Type:** Gatope, New Caledonia, *Vieillard* 514 (lecto: P, fide Dawson (1992)).

Baeckea obtusifolia Brongn. & Gris, *Bull. Soc. Bot. France* 11: 185 (1864). **Type:** Balade, New Caledonia, *Vieillard* 445 (P n.v., photo BRI).

Shrub to 3 m high. Bark unknown. Branchlets quadrangular, with convex surfaces, not flanged, white or grey, margins entire or sinuate; oil glands absent. Leaves petiolate; petiole 0.9–1.6 mm long; lamina lanceolate, oblanceolate or elliptical, 5–11 mm long, 1.0–2.0 mm wide, concolorous, straight, flat or longitudinally striate, not keeled, oil glands obscure on both surfaces, 0.25–0.5 mm apart, midrib rarely faintly visible on abaxial surface, invisible on adaxial surface, intramarginal vein not visible, apex obtuse or acute. Inflorescence axillary, 3–(4–7)-flowered; peduncles 2.5–9.0 mm long; stipes 1.5–5.0 mm long; bracts 2, caducous, narrowly deltate, to 1.5 mm long, acute; bracteoles similar but somewhat smaller. Hypanthium smooth, glandular, obconical, 1.2–1.5 mm long, fused to the ovary except at top; calyx lobes simple; inner lobe semi-orbicular, c. 0.8 × 1.5 mm, thin or rather thick, margins entire; outer lobe absent. Corolla up to 7 mm across; petals broadly ovate to orbicular, 2.0–3.0 × 1.9–2.2 mm, white, oil glands present; margins entire. Stamens 7–11, in groups of 1–

3 opposite the calyx lobes, stamen opposite to centre of calyx lobe often shorter than remainder; filaments terete, 0.5–0.8 mm long, geniculate, with brown connective gland fused to upper part of filament at the bend; anthers adnate, dehiscent by small divergent slits, with loculi free. Style terete, up to 1.0 mm long after anthesis, set into a pit; stigma broadly capitate. Ovary 3-locular; floral disc flat; ovules 12–16 per loculus, arranged radially around placenta. Fruit hemispherical, 1.5–1.8 × 2.1–2.8 mm, valves broadly deltate, not woody, exerted. Seeds semi-discoid, c. 0.75 mm long, brown, with flat sides and rounded backs, finely reticulate (Fig. 1 T–V).

Selected specimens: New Caledonia. 29 km E of Noumea on the road to Yate, Jan 1978, *Armstrong* 1175 (BRI, NSW); Barrage de la Dumbea, Nov 1977, *Bamps* 5727 (K); Mt Tchinguou, Aug 1965, *Bernardi* 10402 (K); Col d'Amoss, Dec 1977, *Dawson* s.n. (WELTU); Col de Boghen, Dec 1952, *Everist* s.n. (BRI); SW base of Mt Dore, Sep 1963, *Green* 1129 (K); Mt Boulinda, Nov 1977, *Jaffre* 2005 (K, P); Ouen Toro hill, Noumea, Dec 1991, *Kelch* 1666 (NSW); Isle of Pines, Oct 1853, *MacGillivray* (K); Sommet est de la Roche Ouaieme, Jul 1968, *McKee* 19191 (BRI, K, P); Col de Tiebo, Sep 1973, *McKee* 27418 (K, P); Haute Koealagouamba, Aug 1974, *McKee* 29057 (BRI, P); Mont Ouin, Aug 1974, *McKee* 29095 (K, NSW, P); Balabio, Tiaodmoin, Sep 1974, *McKee* 29294 (K, P); Paagoumene, Feb 1980, *McKee* 37807 (WELTU); Mt Koniambo, south of Voh, Oct 1982, *McPherson* 4993 (MO, NSW); lower reaches of Dumbea Valley, Nov 1982, *McPherson* 5207 (MO, NSW); Auf den Bergen bei Oubatche, Nov 1902, *Schlechter* 15519 (K); base of Mont Mou, Oct 1923, *White* 2077 (K).

Distribution and habitat: Endemic to New Caledonia and a few adjacent islands. It grows mostly on soils derived from schist or peridotite but also on serpentine alluvium (Dawson 1992).

Phenology: Flowers are recorded between August and February, while fruits are recorded from December to August.

Notes: *Babingtonia virgata* is most closely related to *B. leratii* (Schltr.) A.R.Bean and *B. procera* (J.W.Dawson) A.R.Bean from New Caledonia. It is less closely related to Australian species and can be distinguished from them by its thick and often longitudinally wrinkled leaves (when dried) with obscure oil glands, its convex branchlet internodes lacking oil glands, its shorter hypanthia, its simple calyx lobes and its 12–16 ovules per loculus (16–23 for Australian taxa).

1. *Babingtonia bidwillii* A.R.Bean sp. nov.
affinis *B. similis* A.R.Bean a qua foliis brevioribus et 2.5–4plo longioribus quam latioribus, bracteis 1.2–2.0 mm longis, et petalis saepe fimbriatis differt. **Typus:** Queensland. WIDE BAY DISTRICT: Yurol State Forest, 3 km north-west of Cooroy, 26 October 1993, *A.R. Bean* 6803 (holo: BRI; iso: L, MEL).

Baeckea virgata var. *parvula* F.M.Bailey, Queensland Fl. 2: 585 (1900), nom. inval., nom. nud. ?

Babingtonia sp. (Yurol A.R. Bean 6803) in Henderson (1997).

Shrub or tree to 5 m high. Bark grey, persistent, scaly to fibrous. Branchlets quadrangular with flat sides, slightly flanged, brown, margins entire; oil glands present, not papillose. Leaves petiolate; petiole 0.6–1.0 mm long; lamina elliptical to obovate, 4.5–7.0 mm long, 1.3–2.0 mm wide, discolorous, straight, flat, not keeled, oil glands prominent, especially on lower surface, c. 0.25 mm apart, midrib faintly visible on abaxial surface, not visible on adaxial surface, intramarginal vein not visible, apex obtuse or acute and abruptly narrowed at apex, with a tiny caducous mucro. Inflorescence axillary, 3-flowered, rarely 4–7-flowered; peduncles 4.5–8 mm long; stipes 3.0–4.5 mm long; bracts 2, caducous, linear, 1.2–2.0 mm long, acute; bracteoles similar but somewhat smaller. Hypanthium smooth, glandular, obconical, 1.5–2.0 mm long, fused to the ovary throughout; calyx lobes compound; inner lobe semi-elliptic, c. 0.5 × 1.2 mm, thin, margins entire or fimbriate; outer lobe rudimentary or occasionally conspicuous, 0.4–2 mm long, thick, erect, obtuse or acute. Corolla up to 8 mm across; petals broadly ovate to orbicular, 2.2–2.6 × 2.0–2.5 mm, white, oil glands present, margins entire or fimbriate. Stamens (6)7–10, in groups of 1–3 opposite the calyx lobes, stamen opposite to centre of calyx lobe shorter than remainder; filaments terete, 0.6–1.0 mm long, geniculate, with brown connective gland fused to upper part of filament at the bend; anthers adnate, dehiscing by pores, with loculi fused. Style terete, up to 1.0 mm long after anthesis, set into a pit; stigma broadly capitate. Ovary 3-locular; floral disc concave;

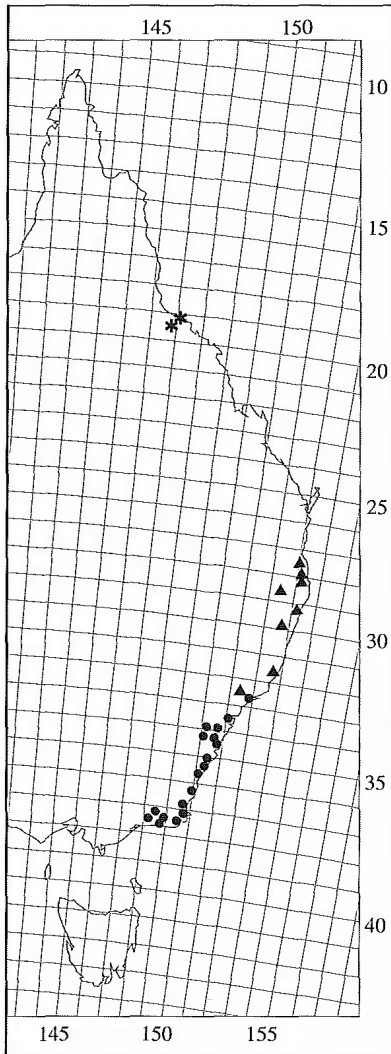
ovules 16–18 per loculus, arranged radially around placenta. Fruit hemispherical, 1.7–2.0 × 2.6–3.5 mm, valves broadly deltate, chartaceous, at rim level or slightly exserted. Seeds discoid, c. 0.6 mm long, brown, with flat sides and rounded backs, minutely reticulate (Fig. 1 C, D).

Specimens examined: Queensland. PORT CURTIS DISTRICT: Shoalwater Bay Training Area, Site SW06, E tributary of Werribee Ck, c. 1.5 km WSW of Mt Carrol, Sep 1993, *McDonald* 5732 & *Scriffignano* (BRI); c. 22 km from Agnes Waters, S of Gladstone, Nov 1976, *Stanley* 78183 & *Ross* (BRI). WIDE BAY DISTRICT: Yalanga station, Bates Road, NE of Kin Kin, Dec 1994, *Bean* 8152 & *Grimshaw* (BRI); N.E. Australia, 1848–53, *Bidwill* 102 (K); Wide Bay, tropical New South Wales, 1848–53, *Bidwill* (GH); Maryborough, Nov 1948, *Clemens* (BRI, GH, K); Cooloola, near Noosa, Teewah Ck, Dec 1971, *Harrold* C204 (BRI); Cooloola N.P., north-east of Banyan Creek, Oct 1982, *McDonald* 3764 & *Williams* (BRI); c. 1.5 km SW of Toogoom, Oct 1996, *Sparshott* KMS1020 & *Baumgartner* (BRI); Cooloola N.P., Noosa River at Cooloola Way bridge, Nov 1993, *Telford* 11981 & *Nightingale* (BISH, BRI, CANB, NSW); Burrum River, undated, *Watson* s.n. (A); Noosa River near Lake Como, Nov 1977, *Williams* 77272 (BRI). MORETON DISTRICT: Lefoes Road, Bli Bli, Dec 1996, *Bean* 11544 (BRI, NSW).

Distribution and habitat: *B. bidwillii* is found in coastal areas of Queensland from Shoalwater Bay to just north of Brisbane (Map 1). It grows in deep sandy soil in eucalypt forest of the coastal lowlands, often adjacent to areas of heathland. Associated species include *Syncarpia glomulifera* (Sm.) Nied. subsp. *glomulifera*, *Melaleuca sieberi* Schauer, *Eucalyptus resinifera* Sm., *E. intermedia* R.T.Baker and *Lophostemon suaveolens* (Gaertn.) Peter G. Wilson & J.T. Waterh.

Phenology: *B. bidwillii* flowers from October to December, and fruits from December to April.

Notes: *B. bidwillii* differs from *B. collina* A.R.Bean by its leaves 4.5–7 mm long (6.5–12.5 mm for *B. collina*) often with obtuse apex, its bracts 1.2–2 mm long (up to 1.4 mm for *B. collina*) and its mostly 3-flowered inflorescences. It differs from *B. similis* A.R.Bean by its shorter leaves which are 2.5–4 times longer than wide (8–10 times for *B. similis*), bracts 1.2–2 mm long (up to 1.3 mm long for *B. similis*) and the often fimbriate



Map 1. Distribution of *Babingtonia pluriflora* ●, *B. similis* ▲, *B. papillosa* *.

petals (entire for *B. similis*). Intergrades with *B. collina* occur north of Brisbane.

Conservation status: This taxon is not considered rare or threatened.

Etymology: The species epithet honours John Carne Bidwill (1815–1853), who collected the first known specimen of this species.

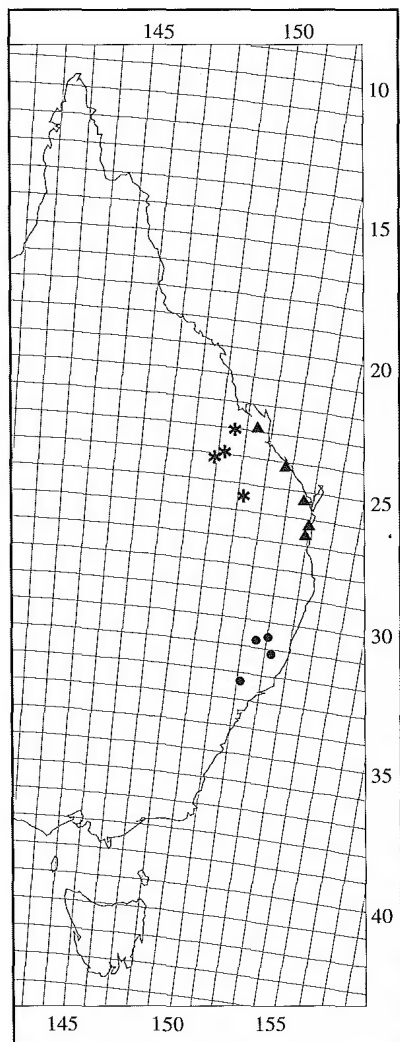
2. *Babingtonia similis* A.R.Bean sp. nov.
affinis *B. angustae* A.R.Bean a qua foliis
lterioribus planisque, et stipitibus 2.5–4.0

mm longis differt. **Typus:** Queensland. MORETON DISTRICT: Springbrook, southwest of Mudgeeraba, 16 January 1994, A.R. Bean 7314 (holo: BRI; iso: DNA, NSW).

Babingtonia sp. (Yatala P. Grimshaw+ G525) in Henderson (1997).

Shrub to 2 m high. Bark grey, persistent, scaly to fibrous. Branchlets quadrangular with flat sides, not flanged, grey, margins entire; oil glands present, not papillose. Leaves petiolate; petiole 0.6–1.0 mm long; lamina narrowly lanceolate, 9–15 mm long, 1.1–1.5 mm wide, discolorous, straight, flat, not keeled, oil glands prominent, especially on lower surface, c. 0.25 mm apart, midrib faintly visible on abaxial surface, invisible on adaxial surface, intramarginal vein not visible, apex acute. Inflorescence axillary, 3-flowered; peduncles 5.0–9.0 mm long; stipes 2.5–4.0 mm long; bracts 2, caducous, narrowly deltate, to 1.3 mm long, acute; bracteoles similar but somewhat smaller. Hypanthium smooth, glandular, obconical, 1.5–2.0 mm long, fused to the ovary except at top; calyx lobes compound; inner lobe semi-elliptic or deltate, c. 0.7 × 1.5 mm, thin, margins mostly fimbriate; outer lobe rudimentary, c. 0.6 mm long, thick, obtuse. Corolla up to 7 mm across; petals broadly ovate to orbicular, 2.0–2.5 × 1.8–2.5 mm, white, oil glands present, margins entire. Stamens 8–10, in groups of 1–3 opposite the calyx lobes, stamen opposite to centre of calyx lobe shorter than remainder; filaments terete, 0.7–1.0 mm long, geniculate, with brown connective gland fused to upper part of filament at the bend; anthers adnate, dehiscent by small divergent slits, with loculi free. Style terete, up to 1.0 mm long after anthesis, set into a pit; stigma broadly capitate. Ovary 3-locular; floral disc concave; ovules 16–18 per loculus, arranged radially around placenta. Fruit hemispherical, c. 1.7 × 3.0 mm, valves broadly deltate, somewhat woody, exserted. Seeds semi-discoid, c. 0.75 mm long, brown, with flat sides and rounded backs, minutely reticulate (Fig. 1 R, S).

Specimens examined: Queensland. MORETON DISTRICT: Springbrook-Mudgeeraba road, Jan 1994, Bean 7319 (BRI);



Map 2. Distribution of *Babingtonia bidwillii* ▲, *B. crassa* ●, *B. brachypoda* *.

near defunct Lion Park, Pacific Highway, Yatala, Mar 1994, *Grimshaw* G525 & *Gibbs* (BRI); Oxenford, S of Brisbane, Aug 1930, *Hubbard* 3690 (K); Beechmont road, 12 km S of Nerang, Feb 1979, *Olsen* 826 & *Lebler* (BRI); 3 km S of Nerang along road to Beechmont, Aug 1985, *Reynolds & Cahway* s.n. (BRI); along Little Nerang Creek on road to Springbrook, Apr 1959, *Thorne* 20481 (BRI). **New South Wales.** NORTH COAST: Laurieton, Mar 1917, *Baker* s.n. (NSW); New Italy, Nov 1895, *Bauerlen* s.n. (NSW); Tooloom Falls, c. 5 km SSW of Urbenville, Nov 1987, *Coveny* 12806 et al. (BRI, MEL, NSW); Blandford Ck, Boundary Creek S.F., Feb 1979, *Floyd* AGF1210 (NSW); Beechwood, Hastings River, May 1915, *Maiden* s.n. (NSW); Black Hill, between Maitland and Newcastle, Jun 1979, *Martin* s.n. (NSW); banks of Tooloom Ck, Urbenville, May 1945, *White* 12775 (A).

Distribution and habitat: *B. similis* extends from the Brisbane area in south-eastern Queensland to near Newcastle in New South Wales (Map 2). It occurs in a wide range of habitats including *Melaleuca*-dominated open forest and eucalypt forest, and on rainforest margins with *Callicoma serratifolia* Andrews and *Acrotriche* sp.

Phenology: Flowers are recorded between January and March, while fruits are recorded from January to August.

Notes: *B. similis* is most closely related to *B. angusta* but differs from that by its discolourous leaves which are flat in cross-section (concolorous and plano-convex for *B. angusta*), and 1.0–1.5 mm wide (0.5–1.0 mm wide for *B. angusta*), and the flower stipes 2.5–4.0 mm long (1–3 mm for *B. angusta*). Intergrades may occur with *B. angusta* in some parts of northern New South Wales, with *B. collina* south of Brisbane, and with *B. pluriflora* around the Port Stephens–Newcastle area.

Conservation status: This taxon is not considered rare or threatened.

Etymology: The specific epithet is from the Latin *similis*, meaning like, resembling, similar; in reference to the similarity between this species and *B. angusta*.

3. Babingtonia angusta A.R.Bean sp. nov.

affinis *B. simili* A.R.Bean a qua foliis concoloris planoconvexis 0.5–1.0 mm latis et stipitibus 1–3 mm longis differt. **Typus:** New South Wales. NORTH COAST: 7 km SE of Coutts Crossing, 2 February 1995, *A.R. Bean* 8321 (holo: BRI; iso: A, CANB, K, MEL, NSW, P, PERTH, distribuendi).

Babingtonia sp. (Atherton A.R. Bean 5707) in Henderson (1997).

Baeckea sp. “Clarence River” in Elliot and Jones (1982).

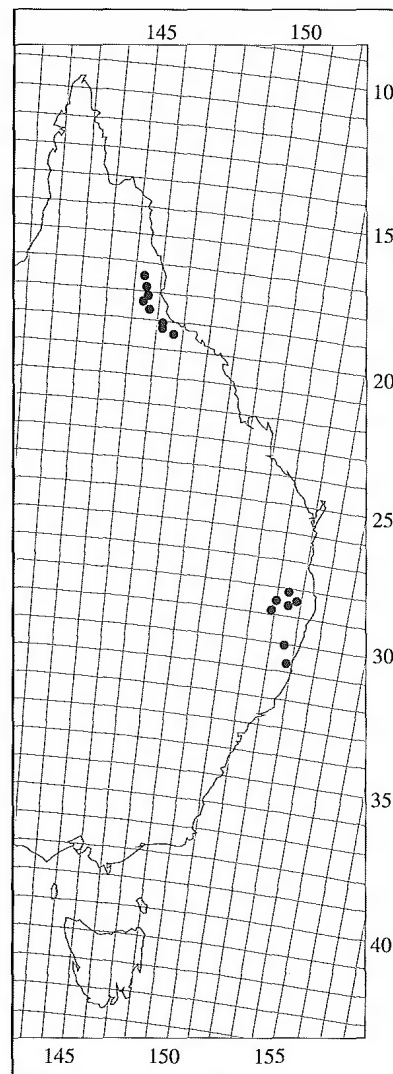
Shrub to 2.5 m high. Bark grey, persistent, scaly to fibrous. Branchlets quadrangular with slightly convex surfaces, not flanged, grey, margins entire; oil glands present, not papillose. Leaves petiolate; petiole 0.6–1.2 mm long; lamina narrowly-oblongate to linear, 5.5–10.0

mm long, 0.5–1.0 mm wide, concolorous, straight, plano-convex to concavo-convex, not keeled, oil glands visible on both surfaces, c. 0.5 mm apart, midrib not visible on either surface, intramarginal vein not visible, apex acute, acuminate or uncinata. Inflorescence axillary, 1–3 flowered; peduncles 2.5–7.5 mm long; stipes 1.0–3.0 mm long; bracts 2, caducous, narrowly deltate, 0.75–1.0 mm long, acute; bracteoles similar but somewhat smaller. Hypanthium smooth, glandular, obconical, 1.5–2.0 mm long, fused to the ovary except at top; calyx lobes compound; inner lobe oblong to semi-elliptic, c. 0.7×1.5 mm, thin, margins entire or denticulate; outer lobe rudimentary, 0.4–0.7 mm long, thick, erect, obtuse. Corolla up to 8 mm across; petals orbicular, $2.0\text{--}2.8 \times 2.0\text{--}2.7$ mm, white, oil glands present, margins entire. Stamens 8–13, in groups of 1–3 opposite the calyx lobes, stamen opposite to centre of calyx lobe shorter than remainder; filaments terete, 0.7–1.1 mm long, geniculate, with brown connective gland fused to upper part of filament at the bend; anthers adnate, dehiscing by pores, with loculi fused. Style terete, up to 1.0 mm long after anthesis, set into a pit; stigma broadly capitate. Ovary 3-locular; floral disc concave; ovules 17–20 per loculus, arranged radially around placenta. Fruit hemispherical, $1.8\text{--}2.2 \times 3.0\text{--}3.5$ mm, valves broadly deltate, not woody, at rim level or slightly exserted. Seeds D-shaped, c. 0.6 mm long, brown, with flat sides and rounded backs, minutely papillose (Fig. 1 E, F).

Specimens examined: Queensland. COOK DISTRICT: Carrington Falls, SSW of Atherton, Jan 1993, *Bean* 5707 (BRI, CANB, K, L, MEL); powerline access road near Herberton, Nov 1995, *Ford* 1671 (QRS); Herberton Weir, Dec 1993, *Forster* PIF14481 (BRI, MEL, QRS). NORTH KENNEDY DISTRICT: Stony Creek, c. 2 km upstream from Wallaman Falls, W of Ingham, Jan 1997, *Bean* 11595 (BRI, NSW, QRS); Blencoe Falls, 30 miles [48 km] W of Cardwell, Nov 1967, *Boylard & Gillieatt* 583 (BRI, K); Koombooloomba area, Dec 1964, *Brooks* s.n. (BRI); Bluewater Creek near Bluewater, c. 25 km N of Townsville, 6 km from coast, Dec 1983, *Cattle* s.n. (BRI); Cameron Creek, on track east from Glen Ruth homestead, between Cardwell and Mt Garnet, Dec 1993, *Cumming* 12565 (BRI, MEL); 17 km past Paluma on road to Hidden Valley, Jan 1992, *Forster* PIF9476 (BRI, DNA, MEL, PERTH); Nitchaga Creek, 6 km S of Tully Falls, Dec 1993, *Forster* PIF14476 (BRI, MEL, QRS); "Taravale" near Hellhole Creek, 0.5–1.5 km E of homestead, Mar 1987, *Jacks* 8754 (BRI, CANB); Blencoe Ck, Nov 1975, *Travers* C17 (A, BRI, K). MORETON DISTRICT: Rocky Creek, Mt Barney N.P., Jul 1994, *Bean* 7762 & *Halford* (BRI); Mt Alford-Moogerah Dam road, just N of Mt

Alford, Mar 1994, *Grimshaw* G534 (BRI, NSW). DARLING DOWNS DISTRICT: Portion 90, Wyberba, near Girraween N.P., Sep 1993, *Bean* 6398 & *Forster* (BRI, NSW); Dalveen, Dec 1962, *Pedley* 1168 (BRI, NSW). New South Wales. NORTH COAST: Bean Creek Falls, 15 km S of Urbenville, Dec 1993, *Bean* 7235 (BRI, NSW); Hortons Creek, on Grafton-Armidale road, Apr 1994, *Bean* 7664 (AD, BRI, MEL, NSW); Nymboida River crossing, 5 km S of Nymboida, Apr 1994, *Bean* 7671 (BRI, NSW); near Sherwood, Oct 1981, *Coveny & Armitage* (NSW).

Distribution and habitat: *B. angusta* occurs in north Queensland between Atherton and Townsville, and also in south-eastern Queensland e.g. near Boonah and Stanthorpe,



Map 3. Distribution of *Babingtonia angusta* ●.

and in north-eastern New South Wales as far south as Sherwood (near Kempsey) (Map 3). *B. angusta* inhabits rocky sites on forested hillsides, or near (but not on) watercourses. Altitudes range between 200 and 1050 metres.

Phenology: Flowers have been recorded from November to March (with most from December to February) and fruits are recorded from March to September.

Notes: *B. angusta* is distinguished by its very narrow leaves, which are less than 10 mm long. A selected form of it has been cultivated in eastern Australia for several years as *Baeckea* sp. "Clarence River". *B. angusta* is most closely related to *B. similis* (see notes under that species), and intermediates may occur in some areas.

Conservation status: This taxon is not considered rare or threatened.

Etymology: The species epithet is from the Latin *angustus* meaning narrow, in reference to the leaves of this species.

4. *Babingtonia pluriflora* (F.Muell.) A.R.Bean comb. nov.

Camphoromyrtus pluriflora F.Muell., Trans. & Proc. Victorian Inst. Advancem. Sci. (1855). **Type:** Victoria, Tambo River, February 1855, *F. Mueller* s.n. (lecto: MEL [MEL 73108] (here chosen); isolecto: BM, G, K).

Shrub to 4 m high. Bark grey, persistent, scaly to fibrous. Branchlets quadrangular with undulate surfaces, slightly flanged, white to pink, margins crenate; oil glands present, not papillose. Leaves petiolate; petiole 0.8–1.5 mm long; lamina lanceolate or elliptical, 10–29 mm long, 2.5–6.0 mm wide, discolorous, straight, flat, not keeled, oil glands prominent, especially on lower surface, c. 0.25 mm apart, equally numerous but less prominent on upper surface, midrib visible on abaxial surface, impressed on adaxial surface, intramarginal vein sometimes visible, apex acute or obtuse. Inflorescence axillary, 3–7(9)-flowered; peduncles 5.0–13.0 mm long; stipes 3.0–7.0 mm long; bracts 2, caducous, linear, c. 1.5 mm long, acute; bracteoles similar but somewhat smaller. Hypanthium smooth, glandular, obconical, 1.7–

2.2 mm long, fused to the ovary except at top; calyx lobes compound; inner lobe semi-elliptic, c. 0.6 × 1.5 mm, thin, margins entire; outer lobe rudimentary, rarely conspicuous, 0.3–1.5 mm long, thick, erect, acuminate or obtuse, usually not exceeding inner lobe. Corolla up to 10 mm across; petals broadly ovate to orbicular, 2.5–3.7 × 2.0–3.5 mm, white, oil glands present, margins entire. Stamens 8–15, in groups of 1–4 opposite the calyx lobes, stamen opposite to centre of calyx lobe shorter than remainder; filaments terete, 0.6–1.0 mm long, geniculate, with pale brown connective gland fused to upper part of filament at the bend; anthers adnate, dehiscing by short slits, with loculi free. Style terete, up to 1.0 mm long after anthesis, set into a pit; stigma broadly capitate. Ovary 3-locular; floral disc concave; ovules 16–23 per loculus, arranged radially around placenta. Fruit hemispherical, 1.7–2.0 × 2.5–3.5 mm, valves broadly deltate, not woody, enclosed or at rim level. Seeds D-shaped, c. 0.75 mm long, brown, with flat sides and rounded backs, minutely papillose (Fig. 1 K–O).

Selected specimens: New South Wales. NORTH COAST: Port Stephens, Aug 1911, *Boorman* s.n. (BRI, NSW). CENTRAL TABLELANDS: Moorara Boss Hill, Mt Dunn road, 5.1 km NE of junction with Kanangra road, Nov 1985, *Benson* 2413 & *Keith* (NSW); Blue Mtns, undated, *Cunningham* s.n. (K). CENTRAL COAST: The Peaks, Burragorang, Aug 1905, *Cabbage* 1290 (NSW); Grose River, Sep 1906, *Maiden & Cabbage* s.n. (NSW); causeway on Glenbrook Ck, Jun 1952, *Whaite* 1162 (NSW). SOUTHERN TABLELANDS: Correa Creek, Bolero Creek, Sep 1898, *Baerlerlen* (NSW). SOUTH COAST: Nadgee Nature Reserve, Newtons Beach, Jan 1985, *Albrecht* 1507 (MEL, NSW); Araluen Valley, 8 miles [13 km] NW of Moruya, Dec 1961, *Briggs* s.n. (NSW); Bodalla S.F., Sep 1953, *Constable* 26515 (K, NSW); Woodburn S.F. on road to Pigeon House Mtn, WSW of Burrill Lake, Oct 1981, *Coveny* 11012 & *James* (BRI, NSW, PERTH); Araluen Valley, 7 miles [11 km] west of Moruya on the Moruya-Araluen road, Dec 1967, *Evans* 2770 (A, K, NSW); Narrabarba Creek crossing on Wonboyn road, c. 20 km SSW of Eden, Feb 1979, *Haegi* 1704 (BRI, K, MEL, NSW); Twofold Bay, Jan 1953, *Melville* 2726 & *Wakefield* (A, K, MEL, NSW). Victoria. Mt Dawson, north of Buchan, Mar 1984, *Albrecht* 364 (MEL, NSW); 15 miles [24 km] WNW of Bairnsdale, Jan 1960, *Aston* 508 (A); 19.2 km S of Gelantipy, on road to Buchan, Dec 1995, *Bean* 9432 & *Jobson* (BRI, MEL); Errinundra Plateau, near intersection of Helmers Rd with Errinundra Rd, Jan 1993, *Fletcher* 135 (MEL); Double Creek nature walk, 6.7 km NW of Mallacoota, Dec 1983, *Parkes* EG60b (CANB, MEL, PERTH); Little River Gorge lookout, NE of Butchers Ridge, Apr 1984, *Parkes* 214 (MEL).

Distribution and habitat: *Babingtonia pluriflora* is common along the coast and adjacent ranges from around Port Stephens in New South Wales to the Mitchell River (near Bairnsdale) in eastern Victoria (Map 1). It most commonly grows in eucalypt forests close to watercourses in deep sandy soils. However, it can sometimes grow on rocky outcrops where tree cover is sparse or absent, and where there is little or no soil. It occurs mostly at altitudes of 5 to 200 metres, but occasionally occurs as high as 800 metres. Some recorded associated species include *Eucalyptus sieberi* L.A.S. Johnson, *E. gummifera* (Gaertn.) Hochr., *Kunzea ericoides* (A.Rich.) Joy Thomps., *Kunzea ambigua* (Sm.) Druce and *Banksia integrifolia* L.f.

Phenology: The main flowering period is from October to January, but some flowering also takes place in the April to July period. Fruits are recorded from January to April.

Notes: *B. pluriflora* varies greatly in leaf size and shape, and grows in a wide range of habitats. Despite this, it has not been possible to recognise more than one taxon as no other characters consistently correlate with leaf dimension or habitat. It is closest to *B. similis* and apparently intergrades with that in the Port Stephens-Newcastle area. *B. pluriflora* differs from *B. similis* by its broader leaves with the midrib impressed on the adaxial surface, its crenate inflated branchlet internodes, its longer petals, longer hypanthium and fruiting valves enclosed or at rim level.

Specimens from Little River gorge and Mt Dawson in eastern Victoria have long acuminate outer calyx lobes, but in other respects are representative of *B. pluriflora*. Specimens from the Budawang Range in southern New South Wales (e.g. Telford 8833, 8905) have very short leaves and pedicels, and may prove to be taxonomically distinct.

Conservation status: This taxon is not considered rare or threatened.

5. *Babingtonia crassa* A.R.Bean sp. nov.
affinis *B. collinae* A.R.Bean a qua foliis

2.8–3.6 mm latis, hypanthio longiore, lobis exterioribus calycis lobos interiores excedentibus, et fructibus majoribus differt. **Typus:** New South Wales. NORTHERN TABLELANDS: Dangar's Falls, 20 km S of Armidale, 31 January 1995, A.R. Bean 8289 (holo: BRI; iso: K, MEL, NE, NSW).

Shrub to 2.5 m high. Bark grey, persistent, scaly. Branchlets quadrangular with flat sides, not flanged, grey, margins entire; oil glands present, not papillose. Leaves petiolate; petiole 1.0–1.5 mm long; lamina elliptical to lanceolate, 7–13 mm long, 2.5–3.5 mm wide, concolorous, straight, with internodes flat, not keeled, oil glands prominent on both surfaces, c. 0.25 mm apart, midrib visible on abaxial surface, not visible on adaxial surface, intramarginal vein not visible, apex acute. Inflorescence axillary, (3)7–9 flowered; peduncles 7–11 mm long; stipes 2–4 mm long; bracts 2, caducous, lanceolate, 1.0–2.5 mm long, acute; bracteoles similar but somewhat smaller. Hypanthium smooth, densely glandular, obconical, 2.0–2.5 mm long, fused to the ovary except at top; calyx lobes compound; inner lobe semi-elliptic, c. 0.4 × 1.5 mm, thin, margins entire; outer lobe rudimentary, c. 1 mm long, thick, erect, acute. Corolla up to 7 mm across; petals orbicular, 2.0–2.8 × 2.0–2.8 mm, white, oil glands present, margins entire. Stamens 8–11, in groups of 1–3 opposite the calyx lobes, stamen opposite to centre of calyx lobe shorter than remainder; filaments terete, 0.5–1.0 mm long, geniculate, with brown connective gland fused to upper part of filament at the bend; anthers adnate, dehiscing by short slits, with loculi free. Style terete, up to 1 mm long after anthesis, set into a pit; stigma broadly capitate. Ovary 3-ocular; floral disc concave; ovules 18–20 per loculus, arranged radially around placenta. Fruit campanulate to hemispherical, 2.5–3.0 × 3.5–4.0 mm, valves broadly deltate, not woody, at rim level. Seeds not seen (Fig. 1 P, Q).

Specimens examined: New South Wales. NORTHERN TABLELANDS: Church Point, Wollomombi Falls, Feb 1979, Floyd 1207 (BRI, NE, NSW); Carrai Plateau edge, Sep 1984, King 353 (NSW); Dangar's Falls, Jan 1883, Statter s.n. (BM). NORTH COAST: McLeay River, undated, Beckler s.n. (K); Upper Carrow Brook, on Mount Royal road, c. 2 km below Cassel's road turnoff, Feb 1985, Faulding 31 (NSW).

Distribution and habitat: *B. crassa* is confined to a small area on the eastern edge of the northern tablelands of New South Wales, from east of Armidale to the Barrington Tops area (Map 2). It grows on rocky sites with little or no soil, sometimes on very steep slopes. Associated species include *Leptospermum petersonii* F.M.Bailey, *Callistemon sieberi* DC. and *Acacia Ingramii* Tindale.

Phenology: Flowers have been recorded in January and February; fruits in February.

Notes: *B. crassa* is related to *B. collina*, but differs by its leaves 2.5–3.5 mm wide (1.7–2.5 mm for *B. collina*), outer calyx lobes exceeding inner lobes, hypanthium 2–2.5 mm long (1.5–2 mm for *B. collina*) and fruits 2.5–3 × 3.5–4 mm (c. 1.5 × 3 mm for *B. collina*). No intergrades with any other species are known.

Conservation status: The risk category of *Babingtonia crassa* according to the criteria of Chalson & Keith (1995) is “Priority for Investigation” (criterion a).

Etymology: The specific epithet is from the Latin *crassus*, meaning thick, in reference to the leaves of this species.

6. *Babingtonia collina* A.R.Bean sp. nov. affinis *B. bidwillii* A.R.Bean a qua foliis longioribus, inflorescentiis plerumque 7-floris, et bracteis plerumque longioribus differt. **Typus:** Queensland. MORETON DISTRICT: Marstaeller Rd, Karana Downs, 1 km S of Mt Crosby, 26 April 1995, L.H. Bird & C. Hays [AQ 635743] (holo: BRI; iso: AD, DNA, MEL, NSW).

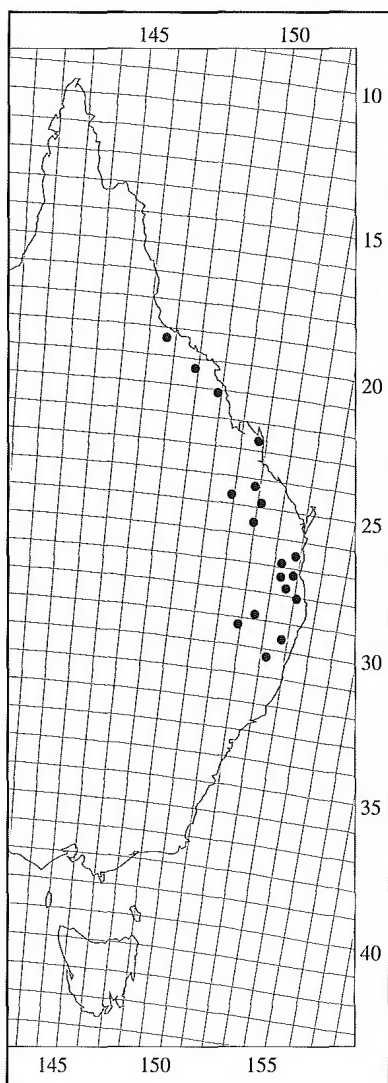
Babingtonia sp. (Mt Crosby L.H. Bird+ AQ635744) in Henderson (1997).

Shrub to 3 m high. Bark grey, persistent, scaly to fibrous. Branchlets quadrangular with flat sides, not flanged, grey, margins entire; oil glands present, not papillose. Leaves petiolate; petiole 0.6–1.3 mm long; lamina lanceolate, 6.5–12.5 mm long, 1.7–2.5 mm wide, slightly discoloured or concolorous, straight, flat, not keeled, oil glands prominent, especially on lower surface, c. 0.25 mm apart, midrib not visible on either surface, intramarginal vein not visible, apex acute, not abruptly narrowed at apex. Inflorescence axillary,

(3)–7 flowered; peduncles 5.0–9.5 mm long; stipes 2.5–4.0 mm long; bracts 2, caducous, deltate, to 1.4 mm long, acute; bracteoles similar but somewhat smaller. Hypanthium smooth, glandular, obconical, 1.5–2.0 mm long, fused to the ovary except at top; calyx lobes simple; inner lobe semi-elliptic, c. 0.6 × 1.5 mm, thick or thin, margins entire; outer lobe absent. Corolla up to 8 mm across; petals orbicular, 2.0–2.8 × 2.0–2.8 mm, white, oil glands present, margins entire. Stamens (7)8–11, in groups of 1–3 opposite the calyx lobes, stamen opposite to centre of calyx lobe shorter than remainder; filaments terete, 0.6–1.0 mm long, geniculate, with brown connective gland fused to upper part of filament at the bend; anthers adnate, dehiscing by short divergent slits, with loculi fused. Style terete, up to 1.0 mm long after anthesis, set into a pit; stigma broadly capitate. Ovary 3-locular; floral disc concave; ovules 16–18 per loculus, arranged radially around placenta. Fruit hemispherical, c. 1.5 × 3.0 mm, valves broadly deltate, not woody, exerted or at rim level. Seeds semi-discoid, c. 0.75 mm long, brown, with flat sides and rounded backs, minutely reticulate (Fig. 1 G, H).

Selected specimens: Queensland. NORTH KENNEDY DISTRICT: Frederick Peak, 25 km SW of Townsville, May 1991, Bean 3206 (BRI, PERTH); summit of Mt Aberdeen, Aug 1993, Bean 6316 (BRI, MEL). SOUTH KENNEDY DISTRICT: Mount Jukes N.P., c. 30 km NW of Mackay, May 1991, Bean 3186 (BRI). PORT CURTIS DISTRICT: Mount Wheeler, 12 km SW of Yeppoon, Aug 1991, Batianoff WH9108022 & Robins (BRI, NSW); Mt Maria, c. 65 km NW of Bundaberg, Nov 1993, Bean 6987 (BRI). BURNETT DISTRICT: summit of Coongara Rock, S.F. 1344, Gayndah shire, Mar 1994, Thomas COO4 (BRI). WIDE BAY DISTRICT: Burnett River, 20 miles [32 km] W of Bundaberg, May 1983, Jansen 69 (BRI); Kenilworth Bluff, c. 8 km N of Kenilworth, Apr 1987, Sharpe 4662 & Bean (BRI). DARLING DOWNS DISTRICT: Severn River gorge between the falls and Low’s Waterholes, Apr 1988, Thomas 283 (BRI). MORETON DISTRICT: Kureelpa Falls, 8 km W of Nambour, Jun 1995, Bean 8728 (BRI, MEL); 3.7 km E of Canungra, Jan 1995, Bean 8188 (BRI, MEL, NSW, QRS); Stumers road 1 km W of Mt Crosby, Apr 1995, Bird & Hays s.n. (BRI, DNA, NSW); Mt Blaine, 25 km S of Ipswich, Peak Crossing area, Apr 1993, Bird s.n. (BRI, NSW); Diana’s Bath, D’Aguilar Range near Mt Byron, Apr 1995, Forster PIF16403 (BRI, MEL, NSW); between Brisbane and Redcliffe, Dec 1930, Hubbard 5510 (K, P); Aspley near Brisbane, Dec 1930, White 7147 (A, BRI, K). New South Wales. NORTH WEST SLOPES: Severn river, c. 4 km upstream of confluence with MacIntyre River, Jul 1991, Coveny 14411 & Makinson (BRI, CANB, MEL, NSW, PERTH). NORTH COAST: Rocky Creek, 28 km from Grafton towards Coaldale, Feb 1995, Bean 8340 (BRI, MEL, NSW); Copmanhurst, Nov 1917, Cheel s.n. (BRI, NSW); Codhole, Nymboida R., 23 km N of Dorrigo, Dec 1977, Floyd AGF826 (NSW).

Distribution and habitat: The main distribution of *B. collina* is from around Yandina in southern Queensland to Dorrigo in New South Wales; however it extends in isolated populations to as far north as Frederick Peak near Townsville (Map 4). Altitudes are mostly 50 to 500 metres, but in north Queensland it reaches 900 metres. It may grow in shrubland on shallow soils derived from sandstone, rhyolite or granite, in eucalypt forest with shallow sandy soils, or in riparian communities, especially where there is outcropping rock.



Map 4. Distribution of *Babingtonia collina* ●.

Phenology: Flowers may be found between November and March, and sometimes as late as May. Fruits occur from January to August.

Notes: *B. collina* is related to both *B. similis* and *B. bidwillii* (see notes under those species). Collections of *B. collina* from Redcliffe, Aspley and Petrie in south-eastern Queensland tend towards *B. bidwillii* in leaf dimensions and flower number. *B. collina* and *B. similis* apparently intergrade in the area south of Brisbane.

Conservation status: This taxon is not considered rare or threatened.

Etymology: The species epithet is from the Latin *collinus*, relating to hills, in reference to the usual habitat of the species.

7. *Babingtonia brachypoda* A.R.Bean sp. nov.

affinis *B. collinae* A.R.Bean a qua foliis oblanceolatis apice obtusis, inflorescentiis 3-floris, stipitibus 1.2–2.5 mm longis et petalis fimbriatis differt. **Typus:** Queensland. LEICHHARDT DISTRICT: “Humboldt”, 45 km north-east of Rolleston, 26 January 1996, *A.R.Bean* 9541 (holo: BRI; iso: CANB, K, L, MEL, NSW, distribuendi).

Babingtonia sp. (Comet P. Rowland AQ634382) in Henderson (1997).

Shrub to 4 m high. Bark grey, persistent, scaly to fibrous. Branchlets quadrangular with flat sides, not flanged, grey, margins entire; oil glands present, not papillose. Leaves petiolate; petiole 0.7–1.3 mm long; lamina obovate, 5.5–9.0 mm long, 1.8–2.8 mm wide, concolorous, straight, flat, not keeled, oil glands prominent, especially on lower surface, c. 0.25 mm apart, midrib not visible on either surface, intramarginal vein not visible, apex obtuse or with a tiny caducous mucro. Inflorescence axillary, 3-flowered; peduncles 3–6 mm long; stipes 1.2–2.5 mm long; bracts 2, caducous, narrowly deltate, 1.1–1.4 mm long, acute; bracteoles similar but somewhat smaller. Hypanthium smooth, glandular, obconical, 1.5–1.8 mm long, fused to the ovary except at top; calyx lobes simple; inner lobe semi-elliptic, c. 0.7 × 1.5 mm, thin, margins entire or fimbriate; outer lobe absent. Corolla up to 8 mm across; petals orbicular, 2.2–2.5 × 1.8–2.5 mm, white, oil

glands present, margins fimbriate. Stamens 9–12, in groups of 1–3 opposite the calyx lobes, stamen opposite to centre of calyx lobe shorter than remainder; filaments terete, 0.4–0.8 mm long, geniculate, with brown connective gland fused to upper part of filament at the bend; anthers adnate, dehiscing by short divergent slits, with loculi fused. Style terete, up to 1 mm long after anthesis, set into a pit; stigma broadly capitate. Ovary 3-locular; floral disc concave; ovules 16–18 per loculus, arranged radially around placenta. Fruit hemispherical, c. 2.0 × 3.5 mm, valves broadly deltate, somewhat woody, exserted. Seeds D-shaped, c. 0.8 mm long, brown, with flat sides and rounded backs, minutely reticulate (Fig. 1 A, B).

Specimens examined: Queensland. LEICHHARDT DISTRICT: “Humboldt”, 45 km north-east of Rolleston, Jan 1996, *Bean* 9543 (BRI, MEL); c. 30 km NW of Woorabinda, Henry Creek, May 1996, *Brushe* JB206 (BRI); “Humboldt” S of Blackwater, Jan 1997, *Fensham* 3002 (BRI); Precipice NP, Cables Ck catchment, Sep 1996, *Forster* 19788 (BRI); “Apis Creek”, W of Marlborough, Mar 1993, *Fensham* 1137 (BRI); “Humboldt” via Comet, Feb 1995, *Rowland* s.n. (BRI).

Distribution and habitat: *B. brachypoda* is known from a few sites near the towns of Rolleston, Woorabinda and Theodore (Map 2), on sandstone gullies or on the sandy alluvials adjacent to sandstone ranges.

Phenology: Flowers have been collected in January and March, and fruits in January.

Notes: *B. brachypoda* is closely related to *B. collina*, but differs from that by the obovate leaves with obtuse apex, 3-flowered inflorescence (mostly 7-flowered for *B. collina*), fimbriate petal margins and stipes 1.2–2.5 mm long (2.5–4 mm long for *B. collina*). No intergrades with any other species are known.

Conservation status: This taxon is not considered rare or threatened.

Etymology: The species epithet is derived from the Greek “brachy-” short and “-podus” footed, based; in reference to the short flower stipes of this species.

8. *Babingtonia papillosa* A.R.Bean sp. nov.
affinis *B. tozerensi* A.R.Bean a qua

foliis plerumque angustioribus, pedicellis brevioribus, et petalis fructibusque minoribus differt. **Typus:** Queensland. NORTH KENNEDY DISTRICT: Ridge near headwaters of Cockatoo Creek, Mt Elliot National Park, south of Townsville, 4 January 1997, *A.R. Bean* 11563 & *P.G. Bean* (holo: BRI; iso: A, K, MEL, NSW, QRS).

Babingtonia sp. (Townsville A.R. Bean 3424) in Henderson (1997).

Shrub to 1.5 m high. Bark grey, persistent, scaly to fibrous. Branchlets quadrangular with flat sides, not flanged, white to grey, margins entire; oil glands present, papillose. Leaves petiolate; petiole c. 1.0 mm long; lamina obovate, 8.0–11.5 mm long, 2.2–3.8 mm wide, concolorous, straight, flat, not keeled, oil glands prominent, especially on lower surface, c. 0.5 mm apart, midrib faintly visible on abaxial surface, invisible on adaxial surface, intramarginal vein not visible, apex obtuse or acute. Inflorescence axillary, 7(–9)-flowered; peduncles 10–12.5 mm long; stipes 2.0–3.5 mm long; bracts 2, caducous, deltate, 0.6–0.8 mm long, acute; bracteoles similar but somewhat smaller. Hypanthium smooth, glandular, broadly campanulate, 1.8–2.2 mm long, fused to the ovary except at top; calyx lobes simple, semi-elliptic, c. 0.6 × 1.8 mm, thin, margins entire. Corolla up to 9 mm across; petals orbicular, 2.5–3.0 × 2.5–3.0 mm, white, oil glands present, margins entire. Stamens 11–14, in groups of 1–4 opposite the calyx lobes, stamen opposite to centre of calyx lobe shorter than remainder; filaments terete, 0.7–1.0 mm long, geniculate, with brown connective gland fused to upper part of filament at the bend; anthers adnate, dehiscing by short divergent slits, with loculi free. Style terete, up to 1.2 mm long after anthesis, set into a pit; stigma broadly capitate. Ovary 3-locular; floral disc shallowly concave; ovules 18–20 per loculus, arranged radially around placenta. Fruit hemispherical, c. 1.5 × 3.0 mm, valves broad, somewhat woody, slightly exserted. Seeds discoid, c. 0.8 mm long, brown, with flat sides and rounded backs, finely reticulate (Fig. 1 I, J).

Specimens examined: Queensland. NORTH KENNEDY DISTRICT: Cockatoo Creek area, Mount Elliot, S of

Townsville, Aug 1991, *Bean* 3589 (BRI, NSW, PERTH); Cape Cleveland section, Bowling Green Bay N.P., S of Townsville, Jul 1991, *Bean* 3424 (BRI).

Distribution and habitat: *B. papillosa* occurs only in the Bowling Green Bay National Park south of Townsville. This National Park includes Mt Elliot and Cape Cleveland, where the two known populations are located (Map 1). The species is confined to shrubland on outcrops of granite-like rocks, on skeletal soil, and is associated with shrubs such as *Leptospermum brachyandrum* (F.Muell.) Druce.

Phenology: Flowers have been recorded in January; fruits from February to July.

Affinities: *B. papillosa* is very closely related to *B. tozerensis*, but differs from that by its flower stipes 2–3.5 mm long (3.5–5 mm for *B. tozerensis*), petals 2.5–3 mm in diameter (3–3.5 mm for *B. tozerensis*), fruits 1.5 mm long and 3 mm in diameter (2 mm long, 4 mm diameter for *B. tozerensis*) and the mostly narrower leaves (2.2–3.8 mm wide, compared to 3.0–6.5 mm for *B. tozerensis*). No intergrades with any other species are known.

Conservation status: The risk category for *Babingtonia papillosa*, according to the criteria of Chalson and Keith (1995) is “critical” (criterion a). The species is known from just two populations. There are 20 known plants at the type locality, and 3 known plants at Cape Cleveland. The species is under threat due to its small population size and specialised habitat.

The recommended conservation status for this species as defined by the Queensland Nature Conservation Act 1992 is ‘endangered’.

Etymology: The specific epithet is from the Latin *papillosus*, meaning “covered with papillae or small wart-like structures”, and refers to the raised oil glands present on the young branchlets.

Dubious name

Baeckea virgata var. *polyandra* Maiden & E.Betche, Proc. Linn. Soc. New South Wales 23: 12 (1898). Type citation: “Forms dense bushes 6–8 ft. high on the banks of the Snowy River at Jindabyne (J.H. Maiden, January 1898)”.

No type has been located for this name, but from the description given in the protologue, this taxon is not related to *Babingtonia virgata*, but may be referable to *Kunzea ericoides*.

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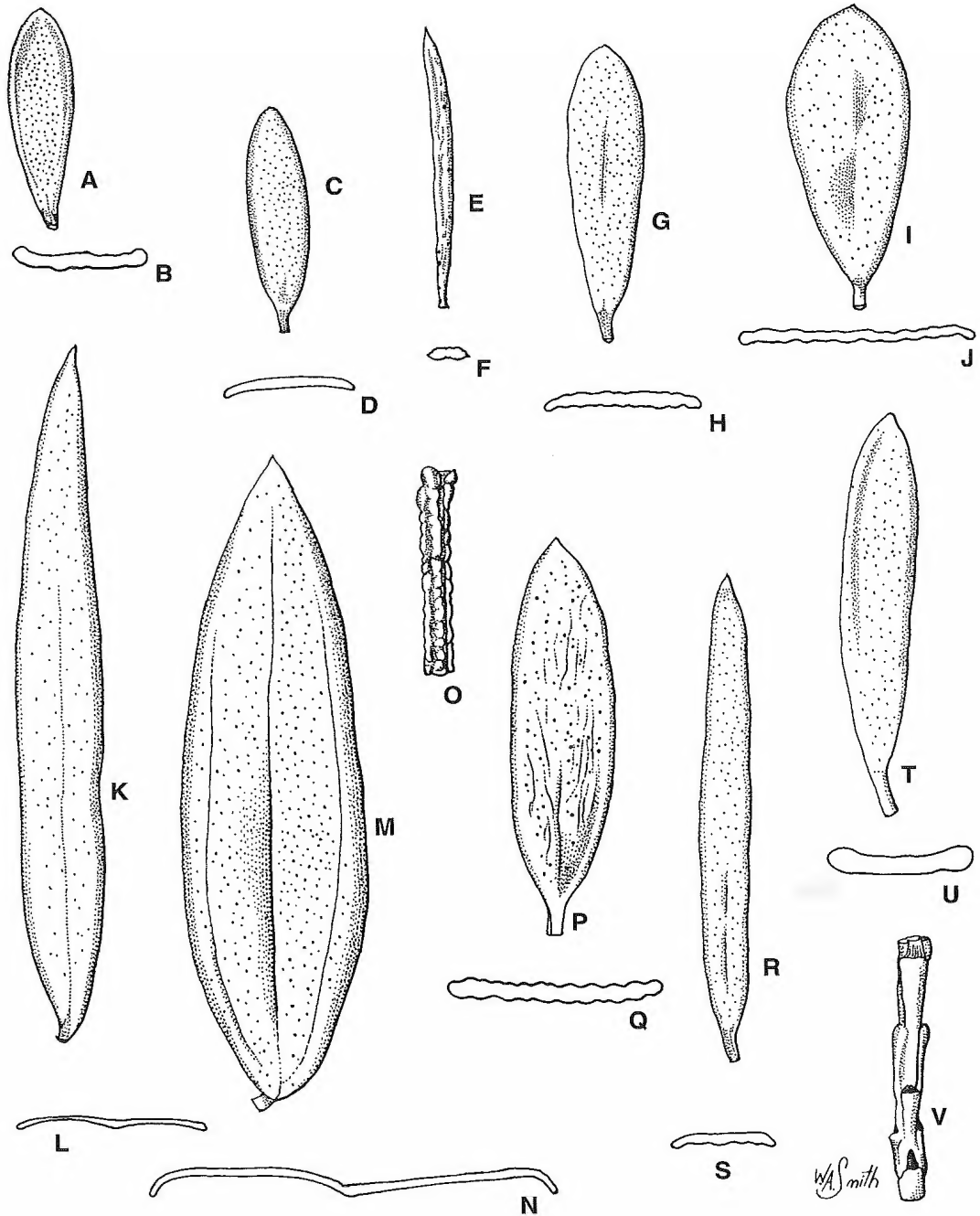


Fig. 1. *Babingtonia brachypoda* A. leaf $\times 5$. B. transverse section of leaf $\times 10$. *Babingtonia bidwillii* C. leaf $\times 5$. D. transverse section of leaf $\times 10$. *Babingtonia angusta* E. leaf $\times 5$. F. transverse section of leaf $\times 10$. *Babingtonia collina* G. leaf $\times 5$. H. transverse section of leaf $\times 10$. *Babingtonia papillosa* I. leaf $\times 5$. J. transverse section of leaf $\times 10$. *Babingtonia pluriflora* K, M. leaves $\times 5$. L, N. transverse section of leaves $\times 10$. O. branchlet $\times 5$. *Babingtonia crassa* P. leaf $\times 5$. Q. transverse section of leaf $\times 10$. *Babingtonia similis* R. leaf $\times 5$. S. transverse section of leaf $\times 10$. *Babingtonia virgata* T. leaf $\times 5$. U. transverse section of leaf $\times 10$. V. branchlet $\times 5$. A, B from Bean 9543; C, D from Bean 6803; E, F from Bean 8321; G, H from Bird (AQ566671); I, J from Bean 3589; K, L, O from Melville 2726; M, N from Pullen 4618; P, Q from Bean 8289; R, S from Thorne 20481; T-V from McKee 37807.